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October 15, 2013

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Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Re: Implementation of the Alternative Energy Portfolio Standards Act of
2004: Standards for the Participation of Demand Side Management
Resources – Technical Reference Manual 2013 Update
Docket Nos. M-2012-2313373 and M-00051865

Dear Secretary Chiavetta:

Pursuant to the Commission's Order entered August 29, 2013, in the above-captioned proceeding, enclosed herewith for filing are the Comments of Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company and West Penn Power Company.

Please contact me if you have any questions regarding this matter.

Sincerely,



Kathy J. Kolich

Enclosure

cc: As Per Certificate of Service

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OCT 15 2013

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Implementation of the Alternative Energy :
Portfolio Standards Act of 2004: : **Docket Nos. M-2012-2313373**
Standards for the Participation of : **M-00051865**
Demand Side Management Resources – :
Technical Reference Manual 2014 Update :
:

**COMMENTS OF METROPOLITAN EDISON COMPANY,
PENNSYLVANIA ELECTRIC COMPANY, PENNSYLVANIA POWER
COMPANY AND WEST PENN POWER COMPANY**

I. INTRODUCTION

On August 29, 2013 the Pennsylvania Public Utility Commission (“Commission”) entered a Tentative Order in the above-referenced matter seeking comments to the proposed updates to the Technical Reference Manual (“2014 TRM”) that will be applied to electric distribution companies’ (“EDCs”) Phase II Energy Efficiency and Conservation (“EE&C”) Plans from June 1, 2013 through May 31, 2014. The Commission directed that comments be submitted within thirty days of publication in the *Pennsylvania Bulletin*, and that reply comments be filed forty days thereafter. The Tentative Order was published in the *Pennsylvania Bulletin* on September 14, 2013.

Metropolitan Edison Company (“Met-Ed”), Pennsylvania Electric Company (“Penelec”), Pennsylvania Power Company (“Penn Power”) and West Penn Power Company (“West Penn”) (collectively, “the Companies”) appreciate the efforts of the Commission, Staff and Statewide Evaluator (“SWE”) in updating the TRM. The new entries in the TRM for floating head pressure, variable frequency drive (“VFD”) refrigeration compressors, and several agricultural measures were helpful. The Companies also believe that the alignment of the peak demand

window with PJM's performance hours was a good update to the TRM. In an effort to continuously improve the TRM, the Companies submit the following comments to the Commission's Tentative Order.

II. GENERAL COMMENTS

The Commission's TRM was initially adopted by the Commission in 2005 and was later expanded and updated to allow the Commission to fulfill the requirements of the EE&C provisions of Act 129 of 2008 ("Act 129"), P.L. 1592, 66 Pa.C.S. §§ 2806.1 and 2806.2. The TRM allows the Commission to determine the "deemed savings" likely to result from specific conservation and other measures contained in specific EE&C plans submitted by the EDCs. The TRM essentially sets the amount of energy savings that an EDC could claim for an energy reduction measure deployed in its service territory and implemented by its customers. In a specific order issued in 2009, the Commission indicated that the TRM would be updated annually.¹

The Companies have a concern about the impact that the Commission's update to the TRM will have on the level of savings and the energy consumption reduction targets that could be achieved under their Phase II EE&C plans.² Specifically, the proposed 2014 TRM contains fundamental, material changes in both volume and significance of savings impacts, and require numerous changes in data collection, tracking and reporting processes. Making changes, particularly of the magnitude and scale of those made in the 2014 TRM, is challenging for implementers and for participating contractors/allies. Future changes of this magnitude should

¹ *Implementation of the Alternative Energy Portfolio Standards Act of 2004: Standards for the Participation of Demand Side Management Resources – Technical Reference Manual Update*, Docket No. M-00051865 (Order entered June 1, 2009).

² In *Energy Efficiency and Conservation Programs*, Docket Nos. M-2012-2289411 and M-2008-2069887 (Implementation Order entered August 2, 2012) ("2012 Implementation Order"), the Commission established Phase II of the EE&C program, requiring EDCs to adopt and implement cost effective plans to reduce energy consumption throughout the Commonwealth, consistent with its Order. The 2012 Implementation Order determined the required consumption reduction targets for each EDC, as well as guidelines for implementing Phase II of the EE&C Program.

be avoided, particularly mid-Plan. The Companies suggest that the Commission consider timing application of future TRM revisions to coincide with the beginning of an Energy Efficiency and Conservation Plans (“EE&C”) phase rather than annually. Moreover, the 2014 TRM shifts from using default or “dcemed” values that it previously allowed to using more customer-specific information. As EE&C Plans were developed with guidance from the TRM, this shift will result in increased uncertainty of the savings that will be achieved through the Companies’ Plans.

In addition, some important and high impact changes, such as values used for treatment of interactive effects in Section 2.29 of the 2014 TRM, were introduced without thorough vetting through the Program Evaluation Group (“PEG”) process. Changes (specific and conceptual) to the TRM are generally vetted through this forum, a practice that should continue. While many changes were discussed and supported through the PEG process, the changed values associated with interactive effects were not. The Companies believe that updates of values included in to the 2014 or other future TRMs should be vetted through this process first so as to provide the Commission with a more thorough understanding of the positions of the various stakeholders that may be affected by the changes.

III. TECHNICAL COMMENTS

In addition to the general comments discussed above, the Companies have specific technical comments as discussed below.

A. Section 1.2.3 - End-use Categories & Thresholds for Using Default Values

On page 5 of the 2014 TRM, Table 1-2 lists threshold criteria in MWh for site-specific data collection requirements (which generally involve metering) in Commercial and Industrial (“C&I”) programs. As an initial matter, the Companies believe that these criteria are lower than is necessary or appropriate for documenting program savings and should be raised. The Companies support the principle articulated in the Tentative Order that: “values are appropriate

for high-impact and high-uncertainty measures, such as HVAC or lighting retrofits in universities or hospitals that have diverse building types, and where those types of projects represent a significant share of program savings for a year.”³ However, based on actual historic participation in the Companies’ programs, the stated thresholds are lower than are appropriate to meet those criteria and will significantly increase costs for program implementation and evaluation and will also inconvenience customers. The low thresholds will significantly and needlessly increase costs for metering and raise barriers to participation in programs based on application process requirements.

Based on the Companies’ review of historical realization rates and participation rates by end use, the Companies believe that the thresholds should be much higher than those contained in the 2014 TRM without raising uncertainty causing additional risk that the realization rates will be volatile or that ratepayer funds will be misallocated. The cost of using a threshold that is lower than necessary will be significant. The Companies’ independent Efficiency Measurement and Verification (“EM&V”) Consultant estimates (based on Program Year 4 participation) that raising the thresholds as recommended will reduce the number of metered sites by more than half (from 173 to 83), save over \$270k annually (90 sites x >\$3k/site) of metering and EM&V costs without jeopardizing confidence in evaluated program savings. Two thirds of the sites for which metering requirements would be avoided are expected to be lighting sites that frequently do not fall into the “high uncertainty” category. The Companies understand that the TRM contains language that thresholds are subject to adjustment by the EDC’s evaluation contractor in coordination with the SWE as appropriate. However, as discussed above, the recommended higher thresholds are more appropriate as a default starting point.

³ Tentative Order at 13.

For the reasons stated above, the Companies recommend thresholds of $\geq 1,000,000$ for lighting projects, and $\geq 500,000$ kWh of HVAC, Motors & VFD, and Building shell project savings. These thresholds are more than adequate, based on stratified sampling and historic project impacts. Therefore, the Companies recommend that the thresholds be increased as follows:

Table -1-2: kWh Savings Thresholds

End-Use Category	TRM Proposed Expected kWh Savings Threshold⁴	Companies' Recommended Threshold
C&I Lighting	$\geq 500,000$ kWh	$\geq 1,000,000$ kWh
C&I HVAC	$\geq 250,000$ kWh	$\geq 500,000$ kWh
C&I Motors & VFDs	$\geq 250,000$ kWh	$\geq 500,000$ kWh
C&I Building Shell	$\geq 250,000$ kWh	$\geq 500,000$ kWh

Second, the Companies further comment that references to metering being "required" be modified to allow for supported exceptions (e.g., where customer processes do not support metering, such as jails) as an alternative where metering cannot be performed.

Last, revisions or guidance is needed to resolve conflicting thresholds mentioned elsewhere in the 2014 TRM:

- §3.2.5 (Lighting) addresses calculations for different space types based on delta wattage;
- §3.2.6 (Lighting) determines operating hours based on savings thresholds; and
- §3.44 (VFD) mentions both the new threshold and thresholds from the current TRM that should be removed. The Companies recommend that the reference to 25,000 kWh savings threshold for metering VFDs be dropped. Given the

⁴ In situations where an ICSP meters a project because the expected kWh savings are above the established threshold and then realizes that the actual savings are below the threshold, metered results should be used for reporting claimed and verified savings.

increased focus on metering, this requirement (that applies to the evaluation sample only) is no longer needed. In most cases the larger projects will be metered, while in some cases simulations or other modes of data collection will suffice.

B. Section 1.5: Definition of Demand Coincidence Factor

In Section 1.5 of the 2014 TRM, the definition of demand coincidence factor includes the phrase “as defined by Act 129,” but Act 129 does not specify a time period. Indeed, the definition under Act 129 defines “peak demand” as “the highest electrical requirement occurring during a specified period...” without specifying what the period is. The Companies recommend that the definition should be modified to reference §1.10 or Table 1-3 to support specificity and align with PJM definitions.

C. Section 1.12: Adjustments to Energy and Resource Savings

In Section 1.12, the 2014 TRM states that “for residential new construction, the interaction of energy savings is accounted for in the home energy rating tool that compares the efficient building to the baseline or reference building and calculates savings.” This statement does not apply to lighting and appliances. The current TRM protocols necessitate extrinsic calculations for these measures. The Companies recommend removing the referenced sentence.

D. Section 1.16 : Custom Measures

Section 1.16 of the 2014 TRM states: “all evaluation sampled custom projects require a Site-Specific Measurement and Verification Plan (“SSMVP”) developed by the EDC evaluator which must be available for SWE review.” The Companies do not believe that the TRM should pre-specify who develops the SSMVP. The Companies suggest that this sentence be amended to: “all evaluation sampled custom projects require a Site-Specific Measurement and Verification Plan (“SSMVP”) developed or approved for use by the EDC evaluator which must be available

for SWE review.” This additional phrase will add flexibility for program implementation by the Implementation Conservation Service Providers (“ICSPs”).

E. Sections 2.4: Electroluminescent Nightlight and 2.7: LED Nightlight

These sections present both deemed installation rates and reference surveys. The Companies request that the Commission clarify whether the deemed installation rate (“ISR”) presented in Table 2-18 of the TRM should be applied, or, instead, surveys should be used. The Companies recommend that the deemed values be used as a default, subject to potential revision based on surveys. The Companies also recommend that the Commission consider merging these two sections, as they are virtually identical.

F. Multiple Sections: EnergyToDemandFactor

While the peak period has been redefined in the 2014 TRM in §1.10 and Table 1-3, the “EnergyToDemandFactor” used in many residential water heating protocols has not been updated. This factor should be updated to reflect the revised peak period and to accurately calculate demand reductions based on the load shapes cited in the protocol. A revised value, calculated in the same manner as in the 2011-2013 TRMs, but adjusted for the 2PM to 6PM peak demand window should be modified from 0.00009172 to a slightly lower value of 0.00008294. This change applies to demand savings calculations for multiple measures that affect residential domestic hot water (i.e., §2.3, §2.6, §2.8, §2.9, §2.13, §2.14, §2.17, §2.18, and §2.42).

G. Section 2.8: Aerators

Calculations for both energy and demand include an ISR factor. The ISR in the calculation for demand should be removed to avoid double counting.

H. Section 2.12: Smart Strip Plug Outlets

Calculations for Smart Strip savings appear to lack an ISR. The ISR source should be EDC Data Gathering since these are distributed through direct install, direct delivery, and point

of sale rebates. In addition, the subsection headings of 2.12 generally reference 2.13. These are typographical errors that should be corrected.

I. **Section 2.16: Ductless Mini-Split Heat Pumps**

First, the application of Load Factor (“LF”) appears misapplied and redundant with other factors reflected in the protocol. The protocol asserts, in the case of a ductless mini-split heat pump, that the “load factor is used to account for inverter-based Ductless Heat Pump (“DHP”) units operating at partial loads. ... This adjustment is required to account for partial load conditions and because the Equivalent Full Load Hours (“EFLH”) used are based on central ducted systems which may overestimate actual usage for baseboard systems.”

This presumes a scenario in which the sizing of DHP is always for the full house rather than the load of the zone served. Such a presumption is frequently not valid. Application of a 25% load factor resumes 400% oversizing as a standard industry practice which is inappropriate. The KEMA study referenced in the 2014 TRM⁵ supporting that value included a mix of installations sized to meet part of the house load, and the full house load. The protocol itself provides for use of either of two EFLH values – one for “primary” and a lower EFLH value for “secondary” spaces which further reinforces the potential for double counting part load conditions through use of an LF.

The Companies recommend that either: a) the $CAPY_{cool}$ and $CAPY_{heat}$ be clarified to reference the baseline cooling or heating capacity of the home; or b) the LF should be modified to be 25% or 100% depending on whether the system is sized for the home or as a “secondary” system.

Second, reference to “pre- and post-metering” should be changed to “pre- and post-metering **or billing analysis**” to support more cost-effective evaluation options.

⁵ “Ductless Mini Pilot Study” by KEMA, Inc., June 2009, p5.

J. Section 2.20: Ceiling / Attic and Wall Insulation

The subsection headings of 2.20 generally reference 2.21. These are typographical errors that should be corrected.

K. Section 2.21: Refrigerator / Freezer Recycling with and without Replacement

The Companies recommend that this section be edited for missing subsection headings and tables that are difficult to read. Also, in the third line of the tables, there is a reference to “volume in square feet” that should be corrected to “volume in cubic feet.”

L. Section 2.29: ENERGY STAR Lighting and Section 2.35: Energy Star LEDs

The Companies have several comments on these sections. First, the formulas in §2.29 for ceiling fans include typos. The “ $(1-IE_{kWh})$ ” and “ $(1-IE_{kW})$ ” for ceiling fan light fixtures should have the minus signs changed to plus signs so they read “ $(1+IE_{kWh})$ ” and “ $(1+IE_{kW})$.”

Second, the values in Tables 2-73 and 2-86 for CF and CFL_{hours} should reference a consistent source rather than different sources. They currently reference two different sources, with CFL_{hours} referencing a Nexus Market Research, “Residential Lighting Markdown Impact Evaluation” study performed for four states in New England, and CF referencing a study performed in Maryland. Both sources provide values supporting CF and CFL_{hours} yet the TRM uses the study that produces the lower value for CF (2.8 hours of use per day from Nexus vs. 3.0 hours of use per day from Maryland) and CFL_{hours} (9.1% from Maryland vs. 11% from the Nexus study). Slides presented during the July 15, 2013 Stakeholder presentation indicated a consistent source (the Maryland study) would be used as a to support 3.0 hours/day for CFL_{hours}.

The Companies support use of a consistent source for both CF and CFL_{hours}. While we believe the Nexus study had the larger sample size supporting its use as a more robust study, the

Companies support either source provided the source is used consistently and not selectively.

Please note that these same comments apply to the CF and hours of use used for LEDs in §2.35.

Third, the prescriptive values presented for HVAC interactive effects in Tables 2.76 and 2-89, while discussed in the abstract in the PEG forum, present values that are neither supported nor thoroughly vetted through the PEG forum. The values have a material impact on program savings, and significantly deviate from the actual values supported by the Companies' independent EM&V consultant. Of particular concern was the applicability or use of REM/Rate modeling in estimating demand impacts. To remedy the significant procedural issues and technical differences these values raise, the Companies recommend either: a) amending the reference to "EDC data gathering" in Table 2-73 to "EDC data gathering **and analysis**" and deleting Table 2-76 in its entirety; or b) revising the sentence preceding Table 2-73 "In the absence of EDC data gathering" to "In the absence of EDC data gathering **and analysis.**" That change will both enable implementation and allow EDC evaluators, in coordination with the SWE, to develop supported understanding and estimates for interactive effects for potential adoption, if appropriate, in future TRMs.

Given the absence of technical review of Table 2-76, the Companies recommend the first option which modifies the language and deletes Table 2-76 in its entirety. The information included in the Table should be reviewed and bettered through the standard PEG process, with the potential for a table such as Table 2-76 populated and included in a future TRM.

M. Section 3.2: Lighting Equipment Improvements

The Companies have several comments on this section. First, the Companies' comments related to appropriate thresholds apply to this section as discussed in Section L above, equally apply to this section.

Second, the source for the majority of building types' hours of use and coincidence factors in Table 3-6 of the TRM is the outdated Version 2.0 of the Mid-Atlantic TRM released in July of 2011. Version 3.0⁶ of the Mid-Atlantic TRM was published in March 2013, and those more current values should be reflected in Table 3-6. Table 3-6 values should be modified to reflect the more current EFLH and CF values from Version 3.0 of the Mid-Atlantic TRM.

Third, building type categories listed in the TRM vary among technologies. While EDCs can work around that issue, the Commission should direct the PEG to assess the viability of aligning building types across technologies in the TRM to enhance consistency in documentation, and streamline tracking and reporting processes.

Fourth, the TRM includes a new provision for projects with connected load savings less than 20 kW and where "whole facility lighting projects where the facility's actual lighting hours deviates by more than 10% from Table 3-4 hours for the appropriate building type." While the application of an "other" category for such cases is at the discretion of the EDC's implementation and EM&V contractors, it is an impractical choice for small projects and should be removed. If there are tables of deemed hours, then it makes sense to use those tables categorically when applicable. The Companies suggest that the sub 20 kW projects should use deemed hours unless they are in the "other" category.

Fifth, as further support for raising the threshold to 1,000,000 kWh from 500,000 kWh, the sentence "Sampling methodologies within a site are to be discerned by the EDC evaluation contractor and communicated to implementation contractors based on the characteristics of the facility in question" implies that EDC evaluators would need to review, in depth, all applications with claimed savings above 500 MWh. The current evaluation budgets cannot accommodate this. Also, the Companies do not understand the goals of this requirement because Phase I

⁶ http://www.necp.org/Assets/uploads/files/emv/emv-products/TRM_March2013Version.pdf

realization rates for large lighting projects were above 90%. On the other hand, if the threshold is raised to align with most evaluators' "certainty stratum" thresholds, then this review can occur at essentially zero incremental cost to ratepayers. Based on these considerations, the threshold should be raised to 1,000,000 kWh and the referenced language should be modified to read:

"Sampling methodologies within a site are to be either discerned by the EDC evaluation contractor based on the characteristics of the facility in question or performed consistent with guidance the EDC EM&V contractor provides."

N. Section 3.2: Premium Efficiency Motors

Provisions, standards and references applicable to PY1, PY2, PY3 and PY4 in Tables 3-14 and 3-15 should be clarified for their applicability to 2014 and beyond. The Companies suggest the references be modified to "PY3 and subsequent years."

O. Section 3.30: LED Channel Signage

This protocol treats EFLH as an open variable but deems CF to be zero for outdoor applications. The Companies recommend making CF also an open variable as the CF may be nonzero in some outdoor signage applications.

P. Appendix E: New Construction Lighting Tool

Several comments apply to update the workbooks related to New Construction Lighting.

- The PY1-PY4 drop down needs to be updated to PY5-PY7, if necessary at all (calculator is updated each PY);
- The tool would be more convenient to use if the fixture codes in column F were available with a drop-down menu like in Appendix C, and if the Facility Type in cell C96 could be selected with a drop down menu;
- Interactive effects should be calculated on a space-by-space basis rather than on a whole-facility basis; and
- The tool includes links to sites that need to be updated or removed. Specifically, including references to KEMA and links to a site and requiring passwords to

usprojects.kema.com should be reconsidered as to need, and removed if not essential.

Q. Appendix D: Motors and VFD calculator


To avoid overestimating operating hours where motors or VFDs are operated in duplex configuration in Appendix D, Motors and VFD calculator, both the motor form and VFD form need to include a 0.5 factor in the EFLH for those configurations. The CF has this factor built in, but not the hours. Also, it may help to modify the calculator to allow custom horsepower ("HP") values rather than the common ones available in the drop-down menus.

IV. CONCLUSION

Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company and West Penn Power Company appreciate the opportunity to provide comments on the Commission's Tentative Order regarding the 2014 Technical Reference Manual. The Companies look forward to working with the Commission and the other parties on this matter.

Respectfully submitted,

Dated: October 15, 2013


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Portfolio Standards Act of 2004: : Docket Nos. M-2012-2313373
Standards for the Participation of : : M-00051865
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CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true and correct copy of the foregoing document upon the individuals listed below, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

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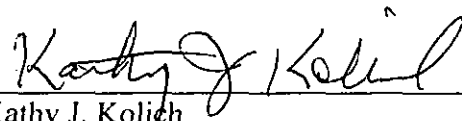
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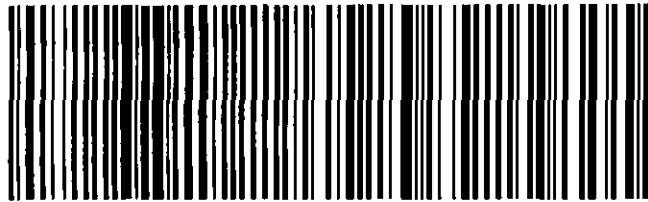
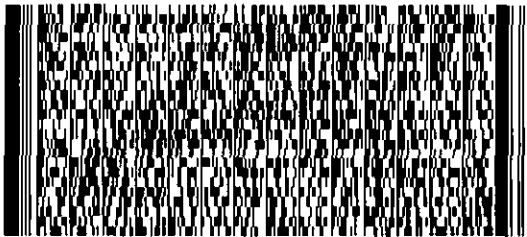
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